8 REFERENCES

Altshuler, D., Pollara, V. J., Cowles, C. R., Van Etten, W. J., Baldwin, J., Linton, L. and Lander, E. S. (2000) *Nature,* **407,** 513-6.

Anant, S. and Davidson, N. O. (2003) *Trends Mol Med,* **9,** 147-52.

Anant, S., MacGinnitie, A. J. and Davidson, N. O. (1995) *J Biol Chem,* **270,** 14762-7.

Anant, S., Mukhopadhyay, D., Sankaranand, V., Kennedy, S., Henderson, J. O. and Davidson, N. O. (2001) *Am J Physiol Cell Physiol,* **281,** C1904-16.

Avner, P. and Heard, E. (2001) *Nat Rev Genet,* **2,** 59-67.

Bachellerie, J. P., Cavaille, J. and Huttenhofer, A. (2002) *Biochimie,* **84,** 775-90.

Backus, J. W., Schock, D. and Smith, H. C. (1994) *Biochim Biophys Acta,* **1219,** 1-14.

Bartel, D. P. (2004) *Cell,* **116,** 281-97.

Bass, B. L. (2000) *Cell,* **101,** 235-8.

Bass, B. L. (2002) *Annu Rev Biochem,* **71,** 817-46.

Bass, B. L. and Weintraub, H. (1988) *Cell,* **55,** 1089-98.

Batzer, M. A., Deininger, P. L., Hellmann-Blumberg, U., Jurka, J., Labuda, D., Rubin, C. M., Schmid, C. W., Zietkiewicz, E. and Zuckerkandl, E. (1996) *J Mol Evol,* **42,** 3-6.

Beghini, A., Ripamonti, C. B., Peterlongo, P., Roversi, G., Cairoli, R., Morra, E. and Larizza, L. (2000) *Hum Mol Genet,* **9,** 2297-304.

Begum, N. A., Kinoshita, K., Kakazu, N., Muramatsu, M., Nagaoka, H., Shinkura, R., Biniszkiewicz, D., Boyer, L. A., Jaenisch, R. and Honjo, T. (2004) *Science,* **305,** 1160-3.

Benne, R., Van den Burg, J., Brakenhoff, J. P., Sloof, P., Van Boom, J. H. and Tromp, M. C. (1986) *Cell,* **46,** 819-26.

Bhalla, T., Rosenthal, J. J., Holmgren, M. and Reenan, R. (2004) *Nat Struct Mol Biol*.

Blanc, V., Kennedy, S. and Davidson, N. O. (2003) *J Biol Chem,* **278,** 41198-204.

Blanc, V., Navaratnam, N., Henderson, J. O., Anant, S., Kennedy, S., Jarmuz, A., Scott, J. and Davidson, N. O. (2001) *J Biol Chem,* **276,** 10272-83.

Blum, B., Bakalara, N. and Simpson, L. (1990) *Cell,* **60,** 189-98.

Bock, R. (2000) In *RNA editing*(Ed, B.L, B.) Oxford University Press, Oxford.

Bock, R., Hermann, M. and Kossel, H. (1996) *Embo J,* **15,** 5052-9.

Bock, R. and Koop, H. U. (1997) *Embo J,* **16,** 3282-8.

Bratt, E. and Ohman, M. (2003) *Rna,* **9,** 309-18.

Brenner, S. (1961) *Cold Spring Harb Symp Quant Biol,* **26,** 101-10.

Brouha, B., Schustak, J., Badge, R. M., Lutz-Prigge, S., Farley, A. H., Moran, J. V. and Kazazian, H. H., Jr. (2003) *Proc Natl Acad Sci U S A,* **100,** 5280-5.

Burns, C. M., Chu, H., Rueter, S. M., Hutchinson, L. K., Canton, H., Sanders-Bush, E. and Emeson, R. B. (1997) *Nature,* **387,** 303-8.

Cavaille, J., Buiting, K., Kiefmann, M., Lalande, M., Brannan, C. I., Horsthemke, B., Bachellerie, J. P., Brosius, J. and Huttenhofer, A. (2000) *Proc Natl Acad Sci U S A,* **97,** 14311-6.

Chen, C. X., Cho, D. S., Wang, Q., Lai, F., Carter, K. C. and Nishikura, K. (2000) *Rna,* **6,** 755-67.
Chen, C. Z., Li, L., Lodish, H. F. and Bartel, D. P. (2004) *Science,* **303,** 83-6.
Chen, S. H., Habib, G., Yang, C. Y., Gu, Z. W., Lee, B. R., Weng, S. A., Silberman, S. R., Cai, S. J., Deslypere, J. P., Rosseneu, M. and et al. (1987) *Science,* **238,** 363-6.
Chen, Z., Eggerman, T. L. and Patterson, A. P. (2001) *Biochem J,* **357,** 661-72.
Cheng, Y. W., Visomirski-Robic, L. M. and Gott, J. M. (2001) *Embo J,* **20,** 1405-14.
Cho, D. S., Yang, W., Lee, J. T., Shiekhattar, R., Murray, J. M. and Nishikura, K. (2003) *J Biol Chem,* **278,** 17093-102.
Christiansen, T. and Torkington, N. (2003) *Perl Cookbook,* O'Reilly.
Clement, J. Q., Maiti, S. and Wilkinson, M. F. (2001) *J Biol Chem,* **276,** 16919-30.
Colgan, D. F. and Manley, J. L. (1997) *Genes Dev,* **11,** 2755-66.
Crick, F. H. (1958) *Symp Soc Exp Biol,* **12,** 138-63.
Dance, G. S., Beemiller, P., Yang, Y., Mater, D. V., Mian, I. S. and Smith, H. C. (2001) *Nucleic Acids Res,* **29,** 1772-80.
Dawson, T. R., Sansam, C. L. and Emeson, R. B. (2004) *J Biol Chem,* **279,** 4941-51.
Decatur, W. A. and Fournier, M. J. (2002) *Trends Biochem Sci,* **27,** 344-51.
Deininger, P. L. and Batzer, M. A. (2002) *Genome Res,* **12,** 1455-65.
Desterro, J. M., Keegan, L. P., Lafarga, M., Berciano, M. T., O'Connell, M. and Carmo-Fonseca, M. (2003) *J Cell Sci,* **116,** 1805-18.
Dewannieux, M., Esnault, C. and Heidmann, T. (2003) *Nat Genet,* **35,** 41-8.
Eckmann, C. R., Neunteufl, A., Pfaffstetter, L. and Jantsch, M. F. (2001) *Mol Biol Cell,* **12,** 1911-24.
Eddy, S. R. (2001) *Nat Rev Genet,* **2,** 919-29.
Fatica, A. and Tollervey, D. (2002) *Curr Opin Cell Biol,* **14,** 313-8.
Fatica, A. and Tollervey, D. (2003) *Nat Struct Biol,* **10,** 237-9.
Flomen, R., Knight, J., Sham, P., Kerwin, R. and Makoff, A. (2004) *Nucleic Acids Res,* **32,** 2113-22.
Gallo, A., Keegan, L. P., Ring, G. M. and O'Connell, M. A. (2003) *Embo J,* **22,** 3421-30.
Garriga, G., Lambowitz, A. M., Inoue, T. and Cech, T. R. (1986) *Nature,* **322,** 86-9.
George, C. X. and Samuel, C. E. (1999) *Proc Natl Acad Sci U S A,* **96,** 4621-6.
Gerber, A., Grosjean, H., Melcher, T. and Keller, W. (1998) *Embo J,* **17,** 4780-9.
Gerber, A., O'Connell, M. A. and Keller, W. (1997) *Rna,* **3,** 453-63.
Gerber, A. P. and Keller, W. (1999) *Science,* **286,** 1146-9.
Gesteland, R. F. (1999) *The RNA world,* New York Cold Spring Harbor Laboratory Press 1999.
Giege, P. and Brennicke, A. (1999) *Proc Natl Acad Sci U S A,* **96,** 15324-9.
Gitlin, L. and Andino, R. (2003) *J Virol,* **77,** 7159-65.
Gott, J. M. (2000) In *RNA editing*(Ed, Bass, B. L.) Oxford University Press, Oxford, pp. 20-36.

Gott, J. M., Visomirski, L. M. and Hunter, J. L. (1993) *J Biol Chem,* **268,** 25483-6.
Greger, I. H., Khatri, L., Kong, X. and Ziff, E. B. (2003) *Neuron,* **40,** 763-74.
Grosjean, H., Auxilien, S., Constantinesco, F., Simon, C., Corda, Y., Becker, H. F., Foiret, D., Morin, A., Jin, Y. X., Fournier, M. and Fourrey, J. L. (1996) *Biochimie,* **78,** 488-501.
Gunning, K. B., Cohn, S. L., Tomlinson, G. E., Strong, L. C. and Huff, V. (1996) *Oncogene,* **13,** 1179-85.
Gurevich, I., Tamir, H., Arango, V., Dwork, A. J., Mann, J. J. and Schmauss, C. (2002) *Neuron,* **34,** 349-56.
Hanrahan, C. J., Palladino, M. J., Ganetzky, B. and Reenan, R. A. (2000) *Genetics,* **155,** 1149-60.
Hartner, J. C., Schmittwolf, C., Kispert, A., Muller, A. M., Higuchi, M. and Seeburg, P. H. (2004) *J Biol Chem,* **279,** 4894-902.
Haussmann, S., Garcin, D. and Kolakofsky, D. (2001) In *RNA Editing*(Ed, Bass, B. L.) Oxford University Press, pp. 139-59.
Herbert, A., Alfken, J., Kim, Y. G., Mian, I. S., Nishikura, K. and Rich, A. (1997) *Proc Natl Acad Sci U S A,* **94,** 8421-6.
Hersberger, M. and Innerarity, T. L. (1998) *J Biol Chem,* **273,** 9435-42.
Hersberger, M., Patarroyo-White, S., Arnold, K. S. and Innerarity, T. L. (1999) *J Biol Chem,* **274,** 34590-7.
Higuchi, M., Maas, S., Single, F. N., Hartner, J., Rozov, A., Burnashev, N., Feldmeyer, D., Sprengel, R. and Seeburg, P. H. (2000) *Nature,* **406,** 78-81.
Higuchi, M., Single, F. N., Kohler, M., Sommer, B., Sprengel, R. and Seeburg, P. H. (1993) *Cell,* **75,** 1361-70.
Hirotsune, S., Yoshida, N., Chen, A., Garrett, L., Sugiyama, F., Takahashi, S., Yagami, K., Wynshaw-Boris, A. and Yoshiki, A. (2003) *Nature,* **423,** 91-6.
Hoagland, M. (2004) *Nature,* **431,** 249.
Honjo, T., Kinoshita, K. and Muramatsu, M. (2002) *Annu Rev Immunol,* **20,** 165-96.
Hoopengardner, B., Bhalla, T., Staber, C. and Reenan, R. (2003) *Science,* **301,** 832-6.
Hopper, A. K. and Phizicky, E. M. (2003) *Genes Dev,* **17,** 162-80.
Hough, R. F. and Bass, B. L. (1997) *Rna,* **3,** 356-70.
Huttenhofer, A., Kiefmann, M., Meier-Ewert, S., O'Brien, J., Lehrach, H., Bachellerie, J. P. and Brosius, J. (2001) *Embo J,* **20,** 2943-53.
Jarmuz, A., Chester, A., Bayliss, J., Gisbourne, J., Dunham, I., Scott, J. and Navaratnam, N. (2002) *Genomics,* **79,** 285-96.
Ji, P., Diederichs, S., Wang, W., Boing, S., Metzger, R., Schneider, P. M., Tidow, N., Brandt, B., Buerger, H., Bulk, E., Thomas, M., Berdel, W. E., Serve, H. and Muller-Tidow, C. (2003) *Oncogene,* **22,** 8031-41.
Johnson, J. M., Castle, J., Garrett-Engele, P., Kan, Z., Loerch, P. M., Armour, C. D., Santos, R., Schadt, E. E., Stoughton, R. and Shoemaker, D. D. (2003) *Science,* **302,** 2141-4.
Joyce, G. F. (2002) *Nature,* **418,** 214-21.
Kallman, A. M., Sahlin, M. and Ohman, M. (2003) *Nucleic Acids Res,* **31,** 4874-81.

Kapranov, P., Cawley, S. E., Drenkow, J., Bekiranov, S., Strausberg, R. L., Fodor, S. P. and Gingeras, T. R. (2002) *Science,* **296,** 916-9.
Kawahara, Y., Ito, K., Sun, H., Aizawa, H., Kanazawa, I. and Kwak, S. (2004) *Nature,* **427,** 801.
Kawahara, Y., Ito, K., Sun, H., Kanazawa, I. and Kwak, S. (2003) *Eur J Neurosci,* **18,** 23-33.
Kawasaki, H. and Taira, K. (2004) *Nature,* **431,** 211-7.
Keegan, L. P., Leroy, A., Sproul, D. and O'Connell, M. A. (2004) *Genome Biol,* **5,** 209.
Kent, W. J. (2002) *Genome Res,* **12,** 656-64.
Kikuno, R., Nagase, T., Waki, M. and Ohara, O. (2002) *Nucleic Acids Res,* **30,** 166-8.
Kim, D. D., Kim, T. T., Walsh, T., Kobayashi, Y., Matise, T. C., Buyske, S. and Gabriel, A. (2004) *Genome Res,* **14,** 1719-25.
Kim, J. W., Kim, H. C., Kim, G. M., Yang, J. M., Boeke, J. D. and Nam, K. (2000) *Nucleic Acids Res,* **28,** 3666-73.
Kim, U., Wang, Y., Sanford, T., Zeng, Y. and Nishikura, K. (1994) *Proc Natl Acad Sci U S A,* **91,** 11457-61.
Knight, S. W. and Bass, B. L. (2002) *Mol Cell,* **10,** 809-17.
Kohler, M., Burnashev, N., Sakmann, B. and Seeburg, P. H. (1993) *Neuron,* **10,** 491-500.
Kondo, N., Matsui, E., Kaneko, H., Aoki, M., Kato, Z., Fukao, T., Kasahara, K. and Morimoto, N. (2004) *Clin Exp Allergy,* **34,** 363-8.
Kortenbruck, G., Berger, E., Speckmann, E. J. and Musshoff, U. (2001) *Neurobiol Dis,* **8,** 459-68.
Kugita, M., Yamamoto, Y., Fujikawa, T., Matsumoto, T. and Yoshinaga, K. (2003) *Nucleic Acids Res,* **31,** 2417-23.
Kumar, M. and Carmichael, G. G. (1997) *Proc Natl Acad Sci U S A,* **94,** 3542-7.
Kumar, M. and Carmichael, G. G. (1998) *Microbiol Mol Biol Rev,* **62,** 1415-34.
Lai, F., Chen, C. X., Carter, K. C. and Nishikura, K. (1997) *Mol Cell Biol,* **17,** 2413-24.
Lander, E. S., Linton, L. M., Birren, B., Nusbaum, C., Zody, M. C., Baldwin, J., Devon, K., Dewar, K., Doyle, M., FitzHugh, W., Funke, R., Gage, D., Harris, K., Heaford, A., Howland, J., Kann, L., Lehoczky, J., LeVine, R., McEwan, P., McKernan, K., Meldrim, J., Mesirov, J. P., Miranda, C., Morris, W., Naylor, J., Raymond, C., Rosetti, M., Santos, R., Sheridan, A., Sougnez, C., Stange-Thomann, N., Stojanovic, N., Subramanian, A., Wyman, D., Rogers, J., Sulston, J., Ainscough, R., Beck, S., Bentley, D., Burton, J., Clee, C., Carter, N., Coulson, A., Deadman, R., Deloukas, P., Dunham, A., Dunham, I., Durbin, R., French, L., Grafham, D., Gregory, S., Hubbard, T., Humphray, S., Hunt, A., Jones, M., Lloyd, C., McMurray, A., Matthews, L., Mercer, S., Milne, S., Mullikin, J. C., Mungall, A., Plumb, R., Ross, M., Shownkeen, R., Sims, S., Waterston, R. H., Wilson, R. K., Hillier, L. W., McPherson, J. D., Marra, M. A., Mardis, E. R., Fulton, L. A., Chinwalla, A. T., Pepin, K. H., Gish, W. R., Chissoe, S. L., Wendl, M. C., Delehaunty, K. D., Miner, T. L., Delehaunty, A., Kramer, J. B., Cook, L. L., Fulton, R. S., Johnson, D. L., Minx, P. J., Clifton, S. W., Hawkins, T., Branscomb, E., Predki, P., Richardson, P., Wenning, S., Slezak, T., Doggett, N., Cheng, J. F.,

Olsen, A., Lucas, S., Elkin, C., Uberbacher, E., Frazier, M., et al. (2001) *Nature,* **409,** 860-921.
Lau, P. P., Xiong, W. J., Zhu, H. J., Chen, S. H. and Chan, L. (1991) *J Biol Chem,* **266,** 20550-4.
Lau, P. P., Zhu, H. J., Baldini, A., Charnsangavej, C. and Chan, L. (1994) *Proc Natl Acad Sci U S A,* **91,** 8522-6.
Lehmann, K. A. and Bass, B. L. (1999) *J Mol Biol,* **291,** 1-13.
Lehmann, K. A. and Bass, B. L. (2000) *Biochemistry,* **39,** 12875-84.
Levanon, E. Y., Eisenberg, E., Yelin, R., Nemzer, S., Hallegger, M., Shemesh, R., Fligelman, Z. Y., Shoshan, A., Pollock, S. R., Sztybel, D., Olshansky, M., Rechavi, G. and Jantsch, M. F. (2004) *Nat Biotechnol,* **22,** 1001-5.
Liao, W., Hong, S. H., Chan, B. H., Rudolph, F. B., Clark, S. C. and Chan, L. (1999) *Biochem Biophys Res Commun,* **260,** 398-404.
Lippman, Z. and Martienssen, R. (2004) *Nature,* **431,** 364-70.
Liu, Z., Song, W. and Dong, K. (2004) *Proc Natl Acad Sci U S A,* **101,** 11862-7.
Lomeli, H., Mosbacher, J., Melcher, T., Hoger, T., Geiger, J. R., Kuner, T., Monyer, H., Higuchi, M., Bach, A. and Seeburg, P. H. (1994) *Science,* **266,** 1709-13.
Luciano, D. J., Mirsky, H., Vendetti, N. J. and Maas, S. (2004) *Rna,* **10,** 1174-7.
Ma, E., Gu, X. Q., Wu, X., Xu, T. and Haddad, G. G. (2001) *J Clin Invest,* **107,** 685-93.
Maas, S., Gerber, A. P. and Rich, A. (1999) *Proc Natl Acad Sci U S A,* **96,** 8895-900.
Maas, S., Kim, Y. G. and Rich, A. (2001a) *Mamm Genome,* **12,** 387-93.
Maas, S., Patt, S., Schrey, M. and Rich, A. (2001b) *Proc Natl Acad Sci U S A,* **98,** 14687-92.
Maden, B. E. (1990) *Prog Nucleic Acid Res Mol Biol,* **39,** 241-303.
Medstrand, P., van de Lagemaat, L. N. and Mager, D. L. (2002) *Genome Res,* **12,** 1483-95.
Mehta, A., Kinter, M. T., Sherman, N. E. and Driscoll, D. M. (2000) *Mol Cell Biol,* **20,** 1846-54.
Meister, G. and Tuschl, T. (2004) *Nature,* **431,** 343-9.
Melcher, T., Maas, S., Herb, A., Sprengel, R., Higuchi, M. and Seeburg, P. H. (1996a) *J Biol Chem,* **271,** 31795-8.
Melcher, T., Maas, S., Herb, A., Sprengel, R., Seeburg, P. H. and Higuchi, M. (1996b) *Nature,* **379,** 460-4.
Mello, C. C. and Conte, D. (2004) *Nature,* **431,** 338-342.
Mighell, A. J., Markham, A. F. and Robinson, P. A. (1997) *FEBS Lett,* **417,** 1-5.
Miyamura, Y., Suzuki, T., Kono, M., Inagaki, K., Ito, S., Suzuki, N. and Tomita, Y. (2003) *Am J Hum Genet,* **73,** 693-9.
Morse, D. P., Aruscavage, P. J. and Bass, B. L. (2002) *Proc Natl Acad Sci U S A,* **99,** 7906-11.
Morse, D. P. and Bass, B. L. (1997) *Biochemistry,* **36,** 8429-34.
Morse, D. P. and Bass, B. L. (1999) *Proc Natl Acad Sci U S A,* **96,** 6048-53.

Muddashetty, R., Khanam, T., Kondrashov, A., Bundman, M., Iacoangeli, A., Kremerskothen, J., Duning, K., Barnekow, A., Huttenhofer, A., Tiedge, H. and Brosius, J. (2002) *J Mol Biol,* **321,** 433-45.

Mullikin, J. C., Hunt, S. E., Cole, C. G., Mortimore, B. J., Rice, C. M., Burton, J., Matthews, L. H., Pavitt, R., Plumb, R. W., Sims, S. K., Ainscough, R. M., Attwood, J., Bailey, J. M., Barlow, K., Bruskiewich, R. M., Butcher, P. N., Carter, N. P., Chen, Y., Clee, C. M., Coggill, P. C., Davies, J., Davies, R. M., Dawson, E., Francis, M. D., Joy, A. A., Lamble, R. G., Langford, C. F., Macarthy, J., Mall, V., Moreland, A., Overton-Larty, E. K., Ross, M. T., Smith, L. C., Steward, C. A., Sulston, J. E., Tinsley, E. J., Turney, K. J., Willey, D. L., Wilson, G. D., McMurray, A. A., Dunham, I., Rogers, J. and Bentley, D. R. (2000) *Nature,* **407,** 516-20.

Muramatsu, M., Kinoshita, K., Fagarasan, S., Yamada, S., Shinkai, Y. and Honjo, T. (2000) *Cell,* **102,** 553-63.

Muramatsu, M., Sankaranand, V. S., Anant, S., Sugai, M., Kinoshita, K., Davidson, N. O. and Honjo, T. (1999) *J Biol Chem,* **274,** 18470-6.

Muto, T., Muramatsu, M., Taniwaki, M., Kinoshita, K. and Honjo, T. (2000) *Genomics,* **68,** 85-8.

Neuberger, M. S., Harris, R. S., Di Noia, J. and Petersen-Mahrt, S. K. (2003) *Trends Biochem Sci,* **28,** 305-12.

Niswender, C. M., Herrick-Davis, K., Dilley, G. E., Meltzer, H. Y., Overholser, J. C., Stockmeier, C. A., Emeson, R. B. and Sanders-Bush, E. (2001) *Neuropsychopharmacology,* **24,** 478-91.

Novo, F. J., Kruszewski, A., MacDermot, K. D., Goldspink, G. and Gorecki, D. C. (1995) *Nucleic Acids Res,* **23,** 2636-40.

Numata, K., Kanai, A., Saito, R., Kondo, S., Adachi, J., Wilming, L. G., Hume, D. A., Hayashizaki, Y. and Tomita, M. (2003) *Genome Res,* **13,** 1301-6.

Nutt, S. L., Hoo, K. H., Rampersad, V., Deverill, R. M., Elliott, C. E., Fletcher, E. J., Adams, S. L., Korczak, B., Foldes, R. L. and Kamboj, R. K. (1994) *Receptors Channels,* **2,** 315-26.

O'Connell, M. A., Gerber, A. and Keller, W. (1997) *J Biol Chem,* **272,** 473-8.

O'Connell, M. A., Krause, S., Higuchi, M., Hsuan, J. J., Totty, N. F., Jenny, A. and Keller, W. (1995) *Mol Cell Biol,* **15,** 1389-97.

Ota, T., Suzuki, Y., Nishikawa, T., Otsuki, T., Sugiyama, T., Irie, R., Wakamatsu, A., Hayashi, K., Sato, H., Nagai, K., Kimura, K., Makita, H., Sekine, M., Obayashi, M., Nishi, T., Shibahara, T., Tanaka, T., Ishii, S., Yamamoto, J., Saito, K., Kawai, Y., Isono, Y., Nakamura, Y., Nagahari, K., Murakami, K., Yasuda, T., Iwayanagi, T., Wagatsuma, M., Shiratori, A., Sudo, H., Hosoiri, T., Kaku, Y., Kodaira, H., Kondo, H., Sugawara, M., Takahashi, M., Kanda, K., Yokoi, T., Furuya, T., Kikkawa, E., Omura, Y., Abe, K., Kamihara, K., Katsuta, N., Sato, K., Tanikawa, M., Yamazaki, M., Ninomiya, K., Ishibashi, T., Yamashita, H., Murakawa, K., Fujimori, K., Tanai, H., Kimata, M., Watanabe, M., Hiraoka, S., Chiba, Y., Ishida, S., Ono, Y., Takiguchi, S., Watanabe, S., Yosida, M., Hotuta, T., Kusano, J., Kanehori, K., Takahashi-Fujii, A., Hara, H., Tanase, T. O., Nomura, Y., Togiya, S., Komai, F., Hara, R., Takeuchi, K., Arita, M., Imose, N., Musashino, K., Yuuki, H., Oshima, A., Sasaki, N., Aotsuka, S., Yoshikawa, Y., Matsunawa, H., Ichihara, T., Shiohata, N., Sano, S., Moriya, S., Momiyama, H., Satoh, N., Takami, S., Terashima, Y., Suzuki, O., Nakagawa, S., Senoh, A.,

Mizoguchi, H., Goto, Y., Shimizu, F., Wakebe, H., Hishigaki, H., Watanabe, T., Sugiyama, A., et al. (2004) *Nat Genet,* **36,** 40-5.
Palladino, M. J., Keegan, L. P., O'Connell, M. A. and Reenan, R. A. (2000a) *Rna,* **6,** 1004-18.
Palladino, M. J., Keegan, L. P., O'Connell, M. A. and Reenan, R. A. (2000b) *Cell,* **102,** 437-49.
Panigrahi, A. K., Gygi, S. P., Ernst, N. L., Igo, R. P., Jr., Palazzo, S. S., Schnaufer, A., Weston, D. S., Carmean, N., Salavati, R., Aebersold, R. and Stuart, K. D. (2001) *Mol Cell Biol,* **21,** 380-9.
Patterson, J. B. and Samuel, C. E. (1995) *Mol Cell Biol,* **15,** 5376-88.
Patton, D. E., Silva, T. and Bezanilla, F. (1997) *Neuron,* **19,** 711-22.
Paul, M. S. and Bass, B. L. (1998) *Embo J,* **17,** 1120-7.
Paule, M. R. and White, R. J. (2000) *Nucleic Acids Res,* **28,** 1283-98.
Paupard, M. C., O'Connell, M. A., Gerber, A. P. and Zukin, R. S. (2000) *Neuroscience,* **95,** 869-79.
Pennisi, E. (2003) *Science,* **300,** 1484.
Peters, N. T., Rohrbach, J. A., Zalewski, B. A., Byrkett, C. M. and Vaughn, J. C. (2003) *Rna,* **9,** 698-710.
Polson, A. G. and Bass, B. L. (1994) *Embo J,* **13,** 5701-11.
Polson, A. G., Bass, B. L. and Casey, J. L. (1996) *Nature,* **380,** 454-6.
Poulsen, H., Nilsson, J., Damgaard, C. K., Egebjerg, J. and Kjems, J. (2001) *Mol Cell Biol,* **21,** 7862-71.
Powell, L. M., Wallis, S. C., Pease, R. J., Edwards, Y. H., Knott, T. J. and Scott, J. (1987) *Cell,* **50,** 831-40.
Raitskin, O., Cho, D. S., Sperling, J., Nishikura, K. and Sperling, R. (2001) *Proc Natl Acad Sci U S A,* **98,** 6571-6.
Revy, P., Muto, T., Levy, Y., Geissmann, F., Plebani, A., Sanal, O., Catalan, N., Forveille, M., Dufourcq-Labelouse, R., Gennery, A., Tezcan, I., Ersoy, F., Kayserili, H., Ugazio, A. G., Brousse, N., Muramatsu, M., Notarangelo, L. D., Kinoshita, K., Honjo, T., Fischer, A. and Durandy, A. (2000) *Cell,* **102,** 565-75.
Rosenthal, J. J. and Bezanilla, F. (2002) *Neuron,* **34,** 743-57.
Rueter, S. M., Dawson, T. R. and Emeson, R. B. (1999) *Nature,* **399,** 75-80.
Sachidanandam, R., Weissman, D., Schmidt, S. C., Kakol, J. M., Stein, L. D., Marth, G., Sherry, S., Mullikin, J. C., Mortimore, B. J., Willey, D. L., Hunt, S. E., Cole, C. G., Coggill, P. C., Rice, C. M., Ning, Z., Rogers, J., Bentley, D. R., Kwok, P. Y., Mardis, E. R., Yeh, R. T., Schultz, B., Cook, L., Davenport, R., Dante, M., Fulton, L., Hillier, L., Waterston, R. H., McPherson, J. D., Gilman, B., Schaffner, S., Van Etten, W. J., Reich, D., Higgins, J., Daly, M. J., Blumenstiel, B., Baldwin, J., Stange-Thomann, N., Zody, M. C., Linton, L., Lander, E. S. and Altshuler, D. (2001) *Nature,* **409,** 928-33.
Sansam, C. L., Wells, K. S. and Emeson, R. B. (2003) *Proc Natl Acad Sci U S A,* **100,** 14018-23.
Saunders, L. R. and Barber, G. N. (2003) *Faseb J,* **17,** 961-83.
Scadden, A. D. and Smith, C. W. (2001) *EMBO Rep,* **2,** 1107-11.
Semenov, E. P. and Pak, W. L. (1999) *J Neurochem,* **72,** 66-72.
Shah, R. R., Knott, T. J., Legros, J. E., Navaratnam, N., Greeve, J. C. and Scott, J. (1991) *J Biol Chem,* **266,** 16301-4.

Sharma, P. M., Bowman, M., Madden, S. L., Rauscher, F. J., 3rd and Sukumar, S. (1994) *Genes Dev,* **8,** 720-31.
Shuman, S. (2002) *Nat Rev Mol Cell Biol,* **3,** 619-25.
Sijen, T. and Plasterk, R. H. (2003) *Nature,* **426,** 310-4.
Simpson, L., Aphasizhev, R., Gao, G. and Kang, X. (2004) *Rna,* **10,** 159-70.
Simpson, L., Sbicego, S. and Aphasizhev, R. (2003) *Rna,* **9,** 265-76.
Skuse, G. R., Cappione, A. J., Sowden, M., Metheny, L. J. and Smith, H. C. (1996) *Nucleic Acids Res,* **24,** 478-85.
Smith, C. M. and Steitz, J. A. (1998) *Mol Cell Biol,* **18,** 6897-909.
Smith, L. A., Peixoto, A. A. and Hall, J. C. (1998) *J Neurogenet,* **12,** 227-40.
Sodhi, M. S., Burnet, P. W., Makoff, A. J., Kerwin, R. W. and Harrison, P. J. (2001) *Mol Psychiatry,* **6,** 373-9.
Sommer, B., Kohler, M., Sprengel, R. and Seeburg, P. H. (1991) *Cell,* **67,** 11-9.
Song, W., Liu, Z., Tan, J., Nomura, Y. and Dong, K. (2004) *J Biol Chem,* **279,** 32554-61.
Sorek, R., Ast, G. and Graur, D. (2002) *Genome Res,* **12,** 1060-7.
Stenger, J. E., Lobachev, K. S., Gordenin, D., Darden, T. A., Jurka, J. and Resnick, M. A. (2001) *Genome Res,* **11,** 12-27.
Stephens, O. M., Haudenschild, B. L. and Beal, P. A. (2004) *Chem Biol,* **11,** 1239-50.
Teng, B., Burant, C. F. and Davidson, N. O. (1993) *Science,* **260,** 1816-9.
Tijsterman, M., Ketting, R. F. and Plasterk, R. H. (2002) *Annu Rev Genet,* **36,** 489-519.
Tisdall, J. (2001) *Begining Perl for bioinformatics,* O'Reilly.
Tonkin, L. A. and Bass, B. L. (2003) *Science,* **302,** 1725.
Tonkin, L. A., Saccomanno, L., Morse, D. P., Brodigan, T., Krause, M. and Bass, B. L. (2002) *Embo J,* **21,** 6025-35.
van Leeuwen, F. W., de Kleijn, D. P., van den Hurk, H. H., Neubauer, A., Sonnemans, M. A., Sluijs, J. A., Koycu, S., Ramdjielal, R. D., Salehi, A., Martens, G. J., Grosveld, F. G., Peter, J., Burbach, H. and Hol, E. M. (1998) *Science,* **279,** 242-7.
Visiers, I., Hassan, S. A. and Weinstein, H. (2001) *Protein Eng,* **14,** 409-14.
Walter, P. and Blobel, G. (1982) *Nature,* **299,** 691-8.
Wang, L., Kimble, J. and Wickens, M. (2004a) *Rna,* **10,** 1444-8.
Wang, Q., Miyakoda, M., Yang, W., Khillan, J., Stachura, D. L., Weiss, M. J. and Nishikura, K. (2004b) *J Biol Chem,* **279,** 4952-61.
Waterston, R. H., Lindblad-Toh, K., Birney, E., Rogers, J., Abril, J. F., Agarwal, P., Agarwala, R., Ainscough, R., Alexandersson, M., An, P., Antonarakis, S. E., Attwood, J., Baertsch, R., Bailey, J., Barlow, K., Beck, S., Berry, E., Birren, B., Bloom, T., Bork, P., Botcherby, M., Bray, N., Brent, M. R., Brown, D. G., Brown, S. D., Bult, C., Burton, J., Butler, J., Campbell, R. D., Carninci, P., Cawley, S., Chiaromonte, F., Chinwalla, A. T., Church, D. M., Clamp, M., Clee, C., Collins, F. S., Cook, L. L., Copley, R. R., Coulson, A., Couronne, O., Cuff, J., Curwen, V., Cutts, T., Daly, M., David, R., Davies, J., Delehaunty, K. D., Deri, J., Dermitzakis, E. T., Dewey, C., Dickens, N. J., Diekhans, M., Dodge, S., Dubchak, I., Dunn, D. M., Eddy, S. R., Elnitski, L., Emes, R. D., Eswara, P., Eyras, E., Felsenfeld, A., Fewell, G. A., Flicek, P., Foley, K., Frankel, W. N., Fulton, L. A., Fulton, R. S., Furey, T. S., Gage, D.,

Gibbs, R. A., Glusman, G., Gnerre, S., Goldman, N., Goodstadt, L., Grafham, D., Graves, T. A., Green, E. D., Gregory, S., Guigo, R., Guyer, M., Hardison, R. C., Haussler, D., Hayashizaki, Y., Hillier, L. W., Hinrichs, A., Hlavina, W., Holzer, T., Hsu, F., Hua, A., Hubbard, T., Hunt, A., Jackson, I., Jaffe, D. B., Johnson, L. S., Jones, M., Jones, T. A., Joy, A., Kamal, M., Karlsson, E. K., et al. (2002) *Nature,* **420,** 520-62.

Wei, C. M., Gershowitz, A. and Moss, B. (1976) *Biochemistry,* **15,** 397-401.

Wolf, J., Gerber, A. P. and Keller, W. (2002) *Embo J,* **21,** 3841-51.

Wong, S. K. and Lazinski, D. W. (2002) *Proc Natl Acad Sci U S A,* **99,** 15118-23.

Wong, S. K., Sato, S. and Lazinski, D. W. (2001) *Rna,* **7,** 846-58.

Yamanaka, S., Poksay, K. S., Arnold, K. S. and Innerarity, T. L. (1997) *Genes Dev,* **11,** 321-33.

Yang, J. H., Luo, X., Nie, Y., Su, Y., Zhao, Q., Kabir, K., Zhang, D. and Rabinovici, R. (2003a) *Immunology,* **109,** 15-23.

Yang, J. H., Nie, Y., Zhao, Q., Su, Y., Pypaert, M., Su, H. and Rabinovici, R. (2003b) *J Biol Chem,* **278,** 45833-42.

Yelin, R., Dahary, D., Sorek, R., Levanon, E. Y., Goldstein, O., Shoshan, A., Diber, A., Biton, S., Tamir, Y., Khosravi, R., Nemzer, S., Pinner, E., Walach, S., Bernstein, J., Savitsky, K. and Rotman, G. (2003) *Nat Biotechnol,* **21,** 379-86.

Yusupov, M. M., Yusupova, G. Z., Baucom, A., Lieberman, K., Earnest, T. N., Cate, J. H. and Noller, H. F. (2001) *Science,* **292,** 883-96.

Zeng, Y., Yi, R. and Cullen, B. R. (2003) *Proc Natl Acad Sci U S A,* **100,** 9779-84.

Zhang, H., Yang, B., Pomerantz, R. J., Zhang, C., Arunachalam, S. C. and Gao, L. (2003) *Nature,* **424,** 94-8.